National Institute of Environmental Health Sciences

One Health: The global challenge of epidemic and endemic leishmaniasis

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Abstract:

One Health' proposes the unification of medical and veterinary sciences with the establishment of collaborative ventures in clinical care, surveillance and control of cross-species disease, education, and research into disease pathogenesis, diagnosis, therapy and vaccination. The concept encompasses the human population, domestic animals and wildlife, and the impact that environmental changes ('environmental health') such as global warming will have on these populations. Visceral leishmaniasis is a perfect example of a small companion animal disease for which prevention and control might abolish or decrease the suffering of canine and human patients, and which aligns well with the One Health approach. In this review we discuss how surveillance for leishmaniases is undertaken globally through the control of anthroponootic visceral leishmaniasis (AVL) and zoonotic visceral leishmaniasis (ZVL). The ZVL epidemic has been managed to date by the culling of infected dogs, treatment of human cases and control of the sandfly vector by insecticidal treatment of human homes and the canine reservoir. Recently, preventive vaccination of dogs in Brazil has led to reduction in the incidence of the canine and human disease. Vaccination permits greater dog owner compliance with control measures than a culling programme. Another advance in disease control in Africa is provided by a surveillance programme that combines remote satellite sensing, ecological modelling, vector surveillance and geo-spatial mapping of the distribution of vectors and of the animal-to-animal or animal-to-human pathogen transmission. This coordinated programme generates advisory notices and alerts on emerging infectious disease outbreaks that may impede or avoid the spreading of visceral leishmaniasis to new areas of the planet as a consequence of global warming.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Fly-borne Disease

Fly-borne Disease: Leishmaniasis

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Medical Community Engagement:

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Research Article, Review

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content